DOCUMENT RESUME

ED 294 903 TM 011 560

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TITLE Conditions for the Persistence of Interest.
PUB DATE Apr 88
NOTE 26p.; Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS College Students; High School Students; *Interest Research; Longitudinal Studies; *Persistence; Psychological Studies

ABSTRACT

The persistence of interest engagement was longitudinally studied with two different interest objects and two different states of interest development. Subjects with definite interest in microcomputers (n=7), with high interest in playing guitar (n=7), and with some interest, not well-developed, in computers (n=10) were interviewed initially and asked to record their internal processes and emotional states in subsequent logged task engagements. High persistent interest engagements between the person and the object were characterized by pleasant feelings, a high degree of absorption, an appreciation of the difficulties as not too easy and not too hard, and gains in proficiency. Sample sizes and numbers of interest engagements were not sufficient to indicate more than these general conclusions. (SLD)

Conditions for the Persistence of Interest

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Paper prepared for a symposium on 'Motivation by Content and Interest - an European approach in Learning Motivation?' during the annual meeting of the American Educational Research Association, New Orleans, April 5-9, 1988.

CONDITIONS FOR THE PERSISTENCE OF INTEREST

THEORY

Among the manifold activities we perform every day there may be a few distinguished by special characteristics: no other person causes us to carry them out, we need no external reward, the activity with the object itself is appealing, and, therefore, we like to engage repeatedly in certain activities with a certain content. To mention some well-known examples: Such activities can be

- listening to music or playing an instrument,
- reading poems or writing novels,
- sports.

However, not only leisure time activities may be performed with pleasure and without external inducement, although the ecology in work or school rarely is free of directions or sanctions. Perhaps, we have fun riding each day with our bicycle to work (instead of taking the bus), or we grab each opportunity to make use of the computer to execute necessary work with more enjoyment.

Every day language labels these voluntary and repeated engagements in object domains like music,

literature, sports, or computers as 'interest'. Since we are interested in such things, we need no external causes or inducements to carry them out. In this way, the concept of interest not only indicates a special set of activities, it also yields a common sense explanation: People are participating without external causes in certain activities because they are interested.

Obviously, on a scientific level we cannot accept such a circular explanation. Nevertheless, we have to explain the phenomenon of interest, that is, why people are engaging repeatedly in activities with certain content in absence of external causes (rewards, e.g.). Allow me at this point to refer to the tradition of interest research. Interest research in this century can be classified in two general approaches.

Differential psychologists (e.g. Guilford, 1954) and vocational psychologists (e.g. Strong, 1943) have conceptualized interest as a dispositon (attitude), which correlates with other measures as vocational choice or satisfaction, or achievement. In contrast to that position stands the approach of educational psychologists (Dewey, 1975; Travers, 1978) and developmental psychologists (Piaget, 1981), who are conceptualizing

interest as a relation between a person and an object.

As we want to know why people are engaging on their own repeatedly in objects, the dispositional approach leads to a simple, but too short explanation by disposition. It seems to be more appropriate to explain the interest engagement by conditions located in the relation between the person and the object. Therefore, our approach joins the tradition of a relational interest concept. We define interest as a (special kind of) relation between a person and an object. The relation is established by engagements of the person with the object. The specific characteristic of an interest engagement is from the viewpoint of our theory the 'self-intentionality', i.e. the autotelic character of the activity, or the absence of instrumentality, external causes or incentives.

Interest relations, manifested in sequences of engagements in a certain object domain, can be described by their persistence and their selectivity.

Persistence means the maintenance of the relation by repeated, active engagements. Indicators for persistence are the frequency and the duration

of occupations with the object.

Selectivity concerns the content of the relation. Selectivity is indicated by stability or change of the content as well as the form of activity of consecutive engagements.

Obviously, persistence and selectivity are not interest specific concepts. Any relation between a person and an object can be characterized by persistence and selectivity. However, the explanation of persistence and selectivity is a particular problem of interest theory. As we defined interest by engagements of a person in a object domain without being caused by any other condition (incentives or sanctions) outside this relationship, we have to analyze the engagements themselves. This means, we have to search for conditions located in the process of acting with the object. In such engagements processes can be assumed which will motivate the person for further interaction with the object.

Some actual theories of intrinsic motivation (e.g. Csikszentmihalyi, 1975; Deci & Ryan, 1985) are indicating such conditions, e.g. flow or feeling of competence and self-determination. Other indications derive from the theory of Piaget or from theories of arousal and emotion (Berlyne,

1967; Pribram, 1980). Our theory concerning the mode of interest operating (cf. Prenzel, 1988) classifies such conditions to cognitive and emotional effects which are embedded in processes of self-regulation. The theory postulates in a series of hypothesis the function of these conditions for the persistence and the selectivity.

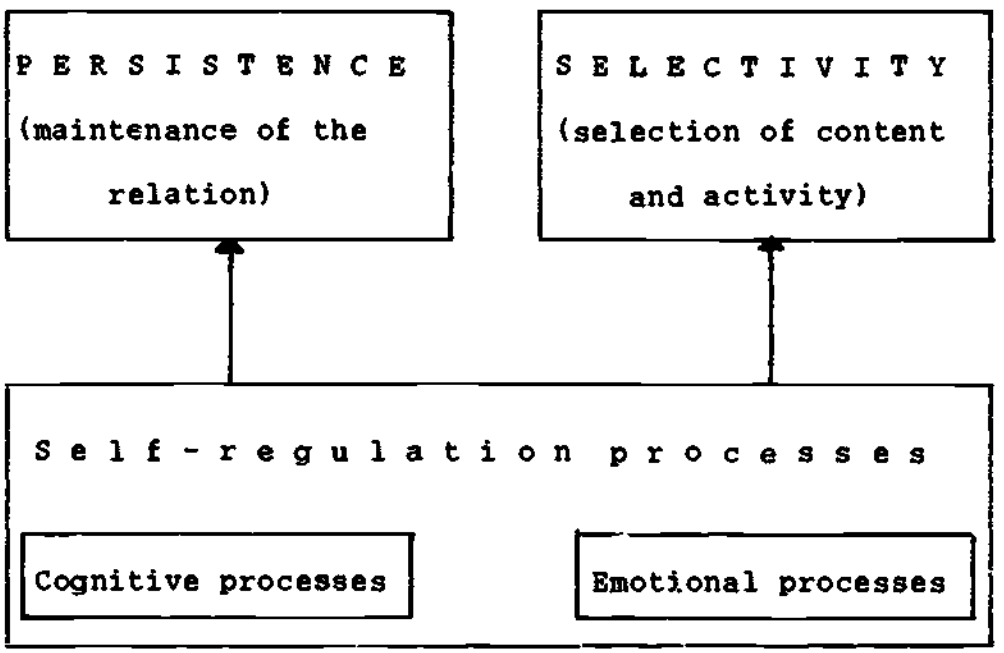

Fig. 1: Variables of the mode of interest operating theory

We will restrict ourselves here to some conditions of the persistence, and deal with some

empirical implications of our theory. It can be assumed that a high persistent interest will be characterized by consecutive engagements with particular characteristics.

Interest engagements with a high persistence should be accompanied

- by distinct positive or pleasant feelings,
- by marked flow, absorption or concentration,
- by challenging difficulties or problems, neither to easy nor to hard, so that they can be mastered,
- by feelings of competence and proficiency.

To test these implications we investigated the courses of interest engagements in person-object-relations with high persistence in three explorative studies.

EMPIRICAL EVIDENCE

Studies and procedures

We conducted three longitudinal studies with a small number of subjects, concerning two different interest objects (computer and guitar) and two different states of interest development.

Study 1 investigated students (n=7) with a distinct interest in micro-computers.

Study 2 included also seven students, yet with a high interest in playing an instrument, namely guitar.

Study 3 at last pertained a preference, not a very well developed interest, for computers. This study included a group of 10 students who applied for a voluntary computer course at the university. The students in this course got the possibility to practice on the computer on their own accord. Their practicing had been the object of investigation.

All the three studies used the same design and procedures. Over a short period of time ((between one and three months) we followed all the engagements of our subjects in their object of interest.

At the onset of each study we conducted an interview to establish some details about the interest development up to this time and for describing the actual kind of interest engagement. The interview served also for ascertaining the self-intentionality of the engagements, that is the absence of external incentives or rewards.

After that, each engagement in the interest object was registered. For that purpose the sub-

jects had to fill out a *logbook sheet* before and after participating. Among other information the subjects had to record the time they began and ended the session, along with the content and the kind of activity of each individual engagement during this session. For each single engagement (defined by activity and content) the subjects had to give ratings of internal processes occuring during the activity. These ratings referred to the general emotional state (rated between -3 for very unpleasant and +3 for very pleasant), the degree of concentration or absorbtion (flow), the degree of difficulty, and the degree of gained proficiency (each rated between 0 and +6).

For testing the implication of our theory we defined the following criteria. Given high persistence

- the emotional state should be rated in average as pleasant, i.e. the means should be greater than zero,
- the difficulties should be rated in the middle range of the scale, i.e. between 2 and 4,
- the ratings for absorbtion/concentration should be greater than 2 on the average,
- the ratings for gained proficiency also should be greater than 2 on the average.

Study 1: Students with a distinct interest in computers

Subjects

This study investigated students (n=7) with a distinct interest in microcomputers. All the students already had pursued their interests over a period of at least two years, and reached a considerable level of competence. The engagements of these group have been followed up over a period of one month.

Results

The students reported between 15 and 28 sessions with the computer (see table 1). During these sessions between 20 and 50 engagements have been carried out. The students spent between 15 and 54 hours at their computers.

Taking in account the age of the subjects, ranging between 15 and 17 years, the data show a considerable, but not an excessive persistence. Therefore, the ratings of emotional and cognitive state should be suitable to our prediction.

Table 1: Persistence of interest engagements in computers

	Subjects						
	A	B	C	D	E	F	G
Frequency							
of sessions	24	28	26	18	18	17	15
of engagements	36	50	47	44	20	22	34
Duration (total) (hours)	54	34	38	26	15	42	41

Table 2 shows the means of the ratings reported always after the engagements.

Table 2: Ratings of cognitive and emotional state (means)

	Subjects						
	A	B	C	D	E	F	G
Feeling							
(-3 to +3)	1.14	1.46	.64	.64	2.05	1.59	.64
Absorbtion							
(0 to 6)	2.72	2.82	1.96	2.84	4.05	2.86	3.17
Difficulty							
(0 to 6)	2.44	2.48	1.53	2.26	3.53	2.36	3.24
Proficiency							
(0 to 6)	1.86	3.04	5.21	2.21	3.21	3.23	2.38

All subjects rated their general emotional state as pleasant, in any case the mean falls in the positive scope of the scale. The ratings of difficulty in six of the seven cases range between 2 and 4, only in one case the average difficulty rating is smaller than 2 (1.53). The same result is obtained for the ratings of absorbtion and the ratings of proficiency. In six cases the results coincide to the theoretical prediction, in one case the data differ.

Study 2: Students with a distinct interest in playing guitar

Subjects

This study (cf. Prenzel & Forster, 1987) pertained another interest object: The seven subjects in study 2 played guitar. They also had begun engaging in this interest at least two years before. Some of the subjects during this time had developed a considerable competence in playing classic, spanish or jazz guitar. The engagements of this group have been recorded for approximately two months.

Results

The persistence of the engagements is described in table 3. The number of sessions and engagements differs for the individuals and so does the total time of play. The subjects are not practicing every day, but continuosly.

Table 3: Persistence of interest engagements in guitar

	Subjects						
	A	B	C	D	E	F	G
Frequency							
of sessions	46	31	21	13	12	20	26
of engagements	124	72	32	33	35	28	85
Duration (total) (hours)	63	18	18	18	26	20	39

Corresponding to study 1 we have to consider the ratings of cognitive and emotional state while acting. The data (see table 4) resemble the results of study 1. In any cases the emotional state is rated on average as "pleasant" (the means are greater than zero).

Table 4: Ratings of cognitive and emotional state (means)

	Subjects						
	A	B	C	D	E	F	G
Feeling							
(-3 to +3)	1.58	1.1	1.28	.58	.94	.79	1.07
Absorbtion							
(0 to 6)	3.92	3.21	3.16	1.94	4.03	2.32	4.21
Difficulty							
(0 to 6)	4.7	3.76	1.56	2.61	3.53	4.16	3.16
Proficiency							
(0 to 6)	2.86	3.11	2.44	1.12	3.49	3.82	4.14

The ratings of difficulty however, fall only in 4 cases in the predicted range between 2 and 4. The means of the absorbtion- and proficiency-rating in six of the seven cases finally are, as predicted, greater than 2. As in study 1 it can be stated that persistent, but non-instrumental engagements in objects are distincted by sensations as pleasant feeling, high concentration and high proficiency gains and a medium level of difficulty.

Study 3: Students with a preference for computers

Subjects

In difference to the first two studies the subjects of study 3 on the onset had not yet worked with computers. The ten subjects, students in educational sciences at the university, decided to take part in an introduction to textprocessing and Basic-programming, which was not part of the regular curriculum. For all subjects the possibility of using the computer or the computer knowledge for professional purposes was not of central relevance for their engagement in the course. Besides the regular instruction and practice sessions the students had the opportunity to work on their own with the computer. In these voluntary sessions the students had to fill out the logbook sheets. Over a period of three months these voluntary practices have been followed up.

Results

Table 5 shows great differences in the frequencies and in the duration of these engagements in

the computer over a period of three months.

Table 5: Persistence of interest engagements in computer

	Subjects									
	A	B	C	D	E	F	G	H	I	K
Frequency										
of sessions	35	5	7	10	6	6	6	13	9	7
of engagements	89	5	15	10	7	6	9	13	9	9
Duration (total) (hours)	59	5	10	17	9	8	10	25	16	11

Three of the ten subjects spent less than 10 hours, eight less than twenty hours. For a period of three months in these cases the persistence is quite low. In contrast, the high frequency of engagements in case A (35 sessions and 59 hours) indicates the beginning of a sweeping interest development.

Especially in the case with high persistence, the ratings of cognitive and emotional processes should correspond to the results of the first two studies. The data in table six show mean ratings suitable to the data of the other studies and also

to our theoretical supposition.

Table 6: Ratings of cognitive and emotional state (means)

	Subjects									
	A	B	C	D	E	F	G	H	I	K
Feeling										
(-3 to +3)	1.84	0	1.66	.1	1	0	1.33	.54	.33	.44
Absorbtion										
(0 to 6)	4	2.8	3.6	3.3	4.28	2.83	3.22	3.77	3.22	2.89
Difficulty										
(0 to 6)	3.25	2	2.53	3.4	3	2.5	2.44	3.15	3.33	3.78
Proficiency										
(0 to 6)	2.67	1.6	3	2.8	4.14	2.17	2.89	2.54	1.89	2.78

Although most subjects of this study are not often engaging on their own in additional computer practices, the reported ratings are not very different to the ratings of the high interested persons in studies 1 and 2. Differences occur above all in the ratings of emotional state. In cases B and F the mean is not greater than zero. These two subjects are those with the lowest persistence. The problem is that for the subjects with only low persistence we dispose only of a few measures. Therefore, it is not easy to judge in

which direction the development in these cases will progress. However, all the subjects in this study started with a positive attitude or preference for computers. Therefore, the ratings of the emotional and cognitive state should be as predicted by our theory: Apart from the emotional rating with two deviating values, in all cases the absorbtion means are greater than 2; the difficulty ratings range between 2 and 4, and the proficiency gains are, except in two cases, also greater than 2.

DISCUSSION

The empirical evidence substantiated by these three studies is still insufficient regarding two reasons. First of all, the number of subjects and the number of engagements investigated for the individual subjects is too small for generalization. Secondly, the ratings of emotional and cognitive state, are idiosyncratic measures. Therefore, they only can be interpreted for the individual cases. The rating values of two or more subjects cannot be compared. We only can size up the direction of rating; e.g. we can state the

number of subjects with emotional ratings on the positive side of the scale, but we cannot process the individual ratings in group scores. We have to note these limititations due to the explorative character of the studies for any interpretation.

Nevertheless, the results obtained in these three studies do correspond to the theoretical predictions: high persistent interest relations between a person and an object are characterized by engagements with certain markings. These are pleasant emotional feelings, e.g. fun, a high degree of absorbtion, an appreciation of difficulties which are not too easy yet not too difficult, and distinct proficiency gains. Such emotional and cog..itive states had to be rated by the subjects in our studies immediately after an engagement in the object of interest. Over a period of a few months the data indicate that persistent interest engagements are accompanied by such processes. For explaining the persistence of interest engagements, such processes can be assumed to be some kind of incentive or motivation located in the activity with the object itself.

Here it is necessary to point out the selectivity and the importance of content for the persistence. Obviously, persistence and

selectivity are not independent variables. The subjects are engaging each time in an activity with a specific level of difficulty, with a certain chance for experiencing flow, proficiency or pleasant feelings. Though the subjects are engaging repeatedly in the same object (computer or guitar), they seldom carry out the same activity with the same content. The engagements frequently lead in a systematic way to certain aspects of the content, e.g. the subjects gain a special kind of program or music piece over series of engagements.

For that reason it is not sufficient to refer to emotional or cognitive states while acting for the purpose of explaining the persistence of interest. Concepts like level of difficulty, flow, or proficiency, although connected to activities, still seem to be too formal. They are not sufficient for explaining why a person engages in a certain activity with a certain content, because there are many activities with different content which may also lead to success, flow or competence.

Therefore, in our ongoing studies we will try get closer to object specific sensations, which may be analyzed as conditions for the persistent engaging in the object of interest. Such object

specific variables could be, in addition to others, the content specific structure of problems (e.g. for learning a computer language or for playing a Bach suite on the guitar) and the resulting structure of necessary competencies, the realm of feelings which may be induced with the content (and which, e.g. would be quite different for playing a suite of J.S. Bach or playing with a graphic computer program), or object specific sensory inputs, from the feeling of the strings or keys on the finger tips to the optical stimulation of the screen or the sheet of music and to the acoustics, or to the proprioceptoric inputs, and so on.

In the next studies we will therefore not only try to increase the empirical evidence by conducting studies with a greater number of subjects and engagements. We also intend to consider more object specific variables which may contribute to the explanation of the persistence of interest.

The educational relevance of such studies can be seen in the identification of variables, which, located in the object domain and in the scope of object specific activities, are part of the motivational background or ecology. Only if we know more about the varieties of object specific incen-

tives and their functions will we be able to understand why people are more interested in certain leisure time activites than in the contents of our school curricula. And, perhaps, it would be possibie to bring the object specific incentives of school contents to a greater motivating effect.

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